Claims:

1. A hearing aid for receiving an input signal and for providing a compensated output signal for a hearing aid user, wherein the hearing aid is capable of automatically switching between a full-function mode and a sleep mode depending on the location of the hearing aid, the hearing aid comprising:

a) a hearing aid module for processing the input signal to generate the compensated output signal; and,

b) a location sensor module connected to the hearing aid module for providing a location information signal to indicate one of an in-the-ear case and an out-of-the-ear case;

wherein, the hearing aid module automatically switches to the full-function mode when the location information signal indicates the in-the-ear case and the hearing aid module automatically switches to the sleep mode when the location information signal indicates the out-of-the-ear case.

2. The hearing aid of claim 1, wherein the location sensor module comprises:

a) a transmission unit for generating a light emission signal in response to a polling signal provided by the hearing aid module;

b) an optical window located on a shell of the hearing aid for allowing the light emission signal to pass out of the location sensor module and a corresponding reflected light signal to pass into the location sensor module;

c) a reception unit for receiving the reflected light signal and generating the location information signal; and,

d) a blocking member placed between the transmission unit and the reception unit for optically blocking the light emission signal from the reception unit;

wherein, during the transmission of the light emission signal, the location information signal is adapted to indicate the in-the-ear-case if the light

reflected signal is received according to reception criteria and the location information signal is adapted to indicate the out-of-the-ear case otherwise.

3. The hearing aid of claim 2, wherein the transmission unit includes a light emitter for generating the light emission signal and the reception unit comprises a light detector for detecting the reflected light signal, wherein the light emitter and light detector are directed towards the optical window at a complementary angle with respect to one another and the blocking member is located between the light emitter and the light detector.

4. The hearing aid of claim 2, wherein the light emission signal and the reflected light signal is a visible light signal.

5. The hearing aid of claim 4, wherein the visible light signal has a wavelength of between approximately 600 and 800 nanometers.

6. The hearing aid of claim 2, wherein the light emission signal and the reflected light signal is an infrared light signal.

7. The hearing aid of claim 6, wherein the infrared light signal has a wavelength greater than approximately 800 nanometers.

8. The hearing aid of claim 2, wherein the reception unit is biased at a minimum voltage whereby the reception unit does not generate a response due to ambient light.

9. The hearing aid of claim 2, wherein the transmission unit comprises:

a) a resistor connected to an output port of the hearing aid module; and,

b) an emitter connected to the resistor and ground, the emitter being placed in a direction towards the optical window and driven to emit the light emission signal in response to the polling signal.

10. The hearing aid of claim 2, wherein the reception unit comprises:

a) a resistor connected to an input port of the hearing aid and to a supply voltage; and,

b) a detector connected to the input port of the hearing aid and ground, the detector being placed in a direction towards the optical window.

11. The hearing aid of claim 2, wherein the hearing aid module comprises an input/output port, the transmission unit and the reception unit are both connected to the input/output port, at least one of the reception unit and the transmission unit includes a time delay element and wherein the reception unit includes a transmission gate for isolating the reception unit from the hearing aid module when the hearing aid module transmits the polling signal to the transmission unit, and the transmission gate connects the reception unit to the hearing aid module, after an appropriate delay provided by the time delay unit, when the reflected light signal is received by the reception unit.

12. The hearing aid of claim 11, wherein the transmission unit comprises:

a) a resistor connected to the input/output port of the hearing aid module; and,

b) a light emitter connected to the resistor and ground, the light emitter being placed in a direction towards the optical window and driven to emit the light emission signal in response to the polling signal.

13. The hearing aid of claim 11, wherein the transmission gate is connected to the input/output port and the reception unit further comprises:

a) the time delay unit connected to the transmission gate;

b) a resistor connected to the time delay unit and to a supply voltage; and,

c) a detector connected to the time delay unit and ground, the detector being placed in a direction towards the optical window.

14. The hearing aid of claim 2, wherein the hearing aid is a behind-the-ear hearing aid and the optical window is placed on an inside surface of the behind-the-ear hearing aid.

15. The hearing aid of claim 2, wherein the hearing aid is one of an in-the-ear hearing aid, an in-the-canal hearing aid and a completely-in-the-canal hearing aid, and in each case, the optical window is placed on a portion of the hearing aid shaped to match the shape of a portion of the concha or the inner auditory meatus of the hearing aid user in a complementary fashion.

16. The hearing aid of claim 1, wherein the location sensor module comprises:

a) an optical window located on a shell of the hearing aid for allowing a visible light signal to pass therethrough; and,

b) a reception unit for receiving the visible light signal and generating a detection event in the location information signal in response to polling provided by the hearing aid module

wherein, the location information signal is adapted to indicate the out-of-the-ear-case if visible light is detected according to reception criteria.

17. The hearing aid of claim 16, wherein the location sensor module further comprises:

a) a transmission unit for generating a visible light emission signal in response to a polling signal provided by the hearing aid module, the transmission unit being positioned to direct the visible light emission signal though the optical window; and,

b) a blocking member placed between the transmission unit and the reception unit for optically blocking the visible light emission signal from the reception unit;

wherein, if the reception unit does not detect visible light, the transmission unit is polled to generate a visible light emission signal, and the location information signal is adapted to indicate the in-the-ear-case if a visible light reflected signal, derived from the visible light emission signal, is received

according to reception criteria and the location information signal is adapted to indicate the out-of-the-ear case otherwise.

18. A method for switching between modes of operation in a hearing aid, wherein the hearing aid is capable of automatically switching between a full-function mode and a sleep mode depending on the location of the hearing aid, the method comprising:

a) providing a polling signal for determining the location of the hearing aid;

b) generating a location information signal after the polling signal is first provided, the location information signal indicating one of an in-the-ear case and an out-of-the-ear case; and,

c) automatically switching to the full-function mode if the location information signal indicates the in-the-ear case and automatically switching to the sleep mode if the location information signal indicates the out-of-the-ear case.

19. The method of claim 18, wherein step (a) includes:

a) generating a light emission signal in response to the polling signal; and,

b) transmitting the light emission signal out of an optical window located on a shell of the hearing aid.

20. The method of claim 19, wherein step (b) includes:

a) generating a first value in the location information signal if a reflected light signal is received via the optical window according to reception criteria, the first value indicating the in-the-ear case; and,

b) otherwise generating a second value in the location information signal, the second value indicating the out-of-the-ear case.

21. The method of claim 19, wherein the method includes providing a visible light signal for the light emission signal.

22. The method of claim 21, wherein the method includes selecting a wavelength between approximately 600 and 800 nanometers for the visible light signal.

23. The method of claim 19, wherein the method includes providing an infrared light signal for the light emission signal.

24. The method of claim 23, wherein the method includes selecting a wavelength greater than approximately 800 nanometers for the infrared light signal.

25. The method of claim 19, wherein the hearing aid is a behind-the-ear hearing aid and the method includes placing the optical window on an inside surface of the behind-the-ear hearing aid.

26. The method of claim 19, wherein the hearing aid is one of an in-the-ear hearing aid, an in-the-canal hearing aid and a completely-in-the-canal hearing aid, and in each case, and the method includes placing the optical window on a portion of the hearing aid that is shaped to match the shape of a portion of the concha or inner auditory meatus of the hearing aid user in a complementary fashion.

27. The method of claim 19, wherein the method further comprises placing an light reflecting material over the optical window for performing conventional testing on the hearing aid.